WHAT IS CLAIMED IS:

1. A recorded matter having an ink-receiving layer of a porous structure, the ink-receiving layer having an image region where an image is formed with a coloring material, wherein the image region has a portion in which all or substantially all of the coloring material distributing in a thickness direction of the ink-receiving layer is embedded in a non-volatile liquid which does not dissolve the coloring material.

2. The recorded matter according to claim 1, wherein the porous structure of the ink-receiving layer is formed with fine particles and the coloring material is adsorbed onto surfaces of the fine particles.

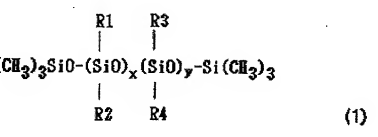
3. The recorded matter according to claim 1, wherein, in at least portion of the image region, all or substantially all pores present in the thickness direction of the ink-receiving layer are filled with the liquid.

4. The recorded matter according to claim 1, wherein the liquid contains silicone oil.

5. The recorded matter according to claim 4,

wherein the silicone oil is a modified silicone oil.

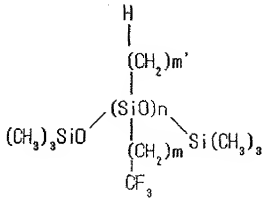
6. The recorded matter according to claim 5, wherein the-modified silicone oil has a structure represented by the following structural formula (1):



(1)

wherein R1, R2, R3 and R4 are independently selected from the group consisting of a phenyl group, a substituted or unsubstituted alkyl group, a halogenated alkyl group, and a functional substituent having a UV absorbency or an antioxidant function; and x and y are independently zero or a positive integer, both x and y do not simultaneously take zero.

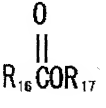
7. The recorded matter according to claim 5, wherein the modified silicone oil has a structure represented by the following structural formula (2):



(2)

wherein n is an integer from 50 to 600; and m and m' are independently an integer of 1 to 20.

8. The recorded matter according to claim 4, wherein the liquid further contains a compound represented by the following structural formula (3):



(3)

wherein R_{16} denotes an alkyl residue of an isocarboxylic acid having 5 to 18 carbon atoms, and R_{17} denotes an alkyl residue of an isoalcohol having 3 to 18 carbon atoms.

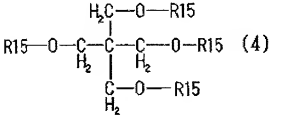
9. The recorded matter according to claim 1, wherein the liquid contains an ester of a saturated fatty acid and an alcohol.

10. The recorded matter according to claim 9, wherein the saturated fatty acid is a polyvalent saturated fatty acid.

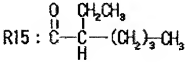
11. The recorded matter according to claim 9, wherein the alcohol is a polyhydric alcohol.

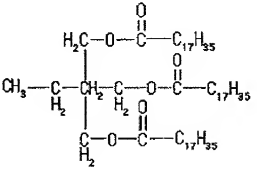
12. The recorded matter according to claim 9, wherein the saturated fatty acid is a saturated fatty acid having 5 to 18 carbon atoms and the alcohol is an alcohol having 2 to 30 carbon atoms.

13. The recorded matter according to claim 9, wherein the ester is selected from the group consisting of hindered esters represented by the following structural formulas (4) and (5):



(4)

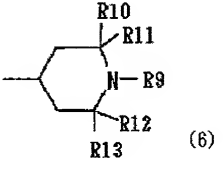




(5)

14. The recorded matter according to claim 13, wherein the liquid contains hindered esters represented by the structural formulas (4) and (5); and a content of the hindered ester represented by the chemical formula (4) is 50% or more of a total weight of the liquid.

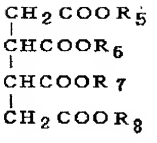
15. The recorded matter according to claim 1, wherein the liquid contains a hindered amine compound having at least one of substituents represented by the following structural formula (6):



(6)

wherein R9 is H or an alkyl group; and R10-R13 are independently a hydrogen atom or an alkyl group having 1 to 3 carbon atoms.

16. The recorded matter according to claim 15, wherein the hindered amine compound is a hindered amine compound represented by the following structural formula (7):

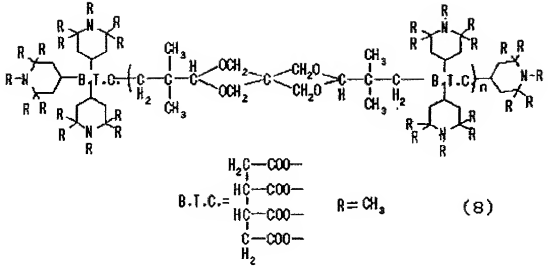


(7)

wherein R_5-R_8 are independently selected from the group consisting of a group represented by the structural formula (6), a hydrogen atom and a monovalent organic residue, and at least one of R_5-R_8 is a group represented by the structural formula (6).

17. The recorded matter according to claim 15, wherein the hindered amine compound is a chemical compound having at least two of the substituents represented by the structural formula (6).

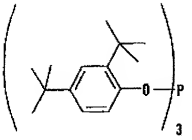
18. The recorded matter according to claim 15, wherein the hindered amine compound is a compound represented by the following formula (8):



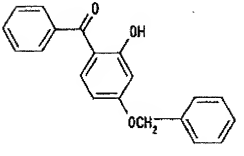
19. The recorded matter according to claim 15, wherein the hindered amine compound is a liquid.

20. The recorded matter according to any one of claims 4, 9 and 15, wherein the non-volatile liquid further contains a substance capable of being dissolved or uniformly dispersed in the non-volatile liquid.

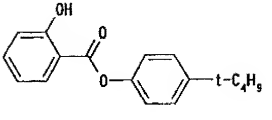
21. The recorded matter according to claim 20, wherein the substance capable of being dissolved or uniformly dispersed in the non-volatile liquid is at least one of the compounds represented by the following formulas (9) to (16):



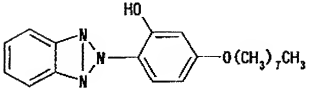
(9)



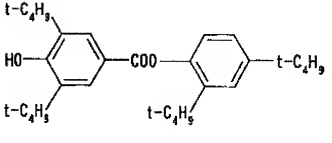
(10)



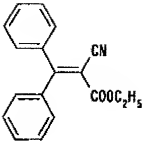
(11)



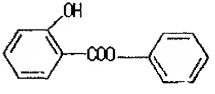
(12)



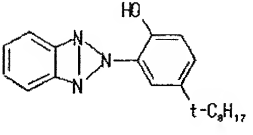
(13)



(14)



(15)



(16)

wherein t-C_4H_9 is a tert-butyl group and t-C_8H_{17} is a tert-octyl group.

22. The recorded matter according to claim 20, wherein the substance capable of being dissolved or uniformly dispersed in the non-volatile liquid is a thickening agent.

23. The recorded matter according to claim 1, wherein the matter comprises an ink-receiving

layer and a substrate for supporting the ink-receiving layer, and further a porous layer between the ink-receiving layer and the substrate.

24. The recorded matter according to claim 23, wherein the porous layer contains barium sulfate.

25. The recorded matter according to claim 2, wherein the fine particles are made of alumina.

26. The recorded matter according to claim 2, wherein the fine particles are made of silicon oxide.

27. A method of manufacturing a recorded matter having an ink-receiving layer of a porous structure, the ink-receiving layer having an image region where an image is formed with a coloring material, the method comprising the steps of:

(i) applying an ink to the ink-receiving layer to obtain an image region where an image is formed with a coloring material contained in the ink;

(ii) applying a liquid comprising a non-volatile liquid not dissolving the coloring material to the ink-receiving layer; and

(iii) forming a portion in which all or substantially all of the coloring material distributing in a thickness direction of the ink-receiving layer is embedded in the non-volatile liquid.

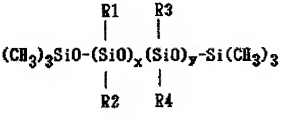
28. The method of manufacturing a recorded matter according to claim 27, wherein the porous structure of the ink-receiving layer is formed with fine particles and the coloring material is adsorbed onto the surfaces of the fine particles.

29. The method of manufacturing a recorded matter according to claim 27, wherein the step (iii) comprises a step of filling with the non-volatile liquid all pores or substantially all pores which are present in the thickness direction of the ink-receiving layer in the image region.

30. The method of manufacturing a recorded matter according to claim 27, wherein the non-volatile liquid contains a silicone oil.

31. The method of manufacturing a recorded matter according to claim 30, wherein the silicone oil is a modified silicone oil.

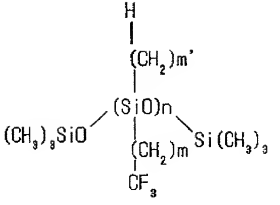
32. The method of manufacturing a recorded matter according to claim 31, wherein the modified silicone oil has a structure represented by the following structural formula (1):



(1)

wherein R1, R2, R3 and R4 are independently selected from the group consisting of a phenyl group, a substituted or unsubstituted alkyl group, a halogenated alkyl group, and a functional substituent having a UV absorbency or an antioxidant function; and x and y are independently zero or a positive integer, both x and y do not simultaneously take zero.

33. The method of manufacturing a recorded matter according to claim 31, wherein the modified silicone oil has a structure represented by the following structural formula (2):



(2)

wherein n is an integer from 50 to 600; and m and m' are independently an integer of 1 to 20.

34. The method of manufacturing a recorded matter according to claim 30, wherein the non-volatile liquid further contains a compound represented by the following structural formula (3):

(3)

wherein R_{16} denotes an alkyl residue of an isocarboxylic acid having 5 to 18 carbon atoms, and R_{17} denotes an alkyl residue of an isoalcohol having 3 to 18 carbon atoms.

35. The method of manufacturing a recorded matter according to claim 27, wherein the non-

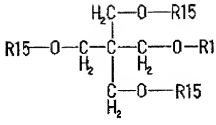
volatile liquid contains an ester of a saturated fatty acid and an alcohol.

36. The method of manufacturing a recorded matter according to claim 35, wherein the saturated fatty acid is a polyvalent saturated fatty acid.

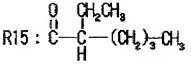
37. The method of manufacturing a recorded matter according to claim 35, wherein the alcohol is a polyhydric alcohol.

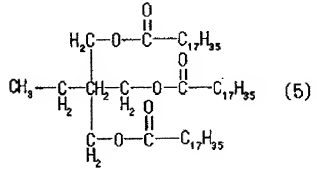
38. The method of manufacturing a recorded matter according to claim 35, wherein the saturated fatty acid is a saturated fatty acid having 5 to 18 carbon atoms and the alcohol is an alcohol having 2 to 30 carbon atoms.

39. The method of manufacturing a recorded matter according to claim 35, wherein the ester is selected from the group consisting of hindered esters represented by the following structural formulas (4) and (5):



(4)

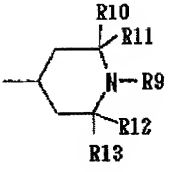




(5)

40. The method of manufacturing a recorded matter according to claim 39, wherein the non-volatile liquid contains hindered esters represented by the structural formulas (4) and (5); and a content of the hindered ester represented by the chemical formula (4) is 50% or more of a total weight of the liquid.

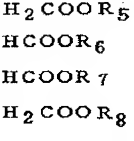
41. The method of manufacturing a recorded matter according to claim 27, wherein the non-volatile liquid contains a hindered amine compound having at least one substituent represented by the following structural formula (6):



(6)

wherein R9 is H or an alkyl group; and R10-R13 are independently a hydrogen atom or an alkyl group having 1 to 3 carbon atoms.

42. The method of manufacturing a recorded matter according to claim 41, wherein the hindered amine compound is a hindered amine compound represented by the following structural formula (7):

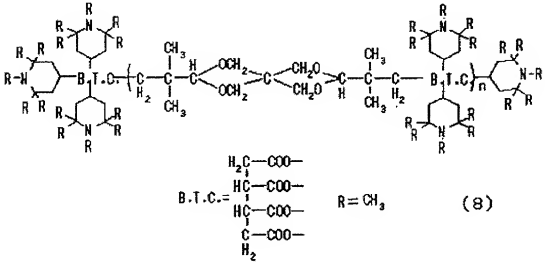


(7)

wherein R_5-R_8 are independently selected from the group consisting of a group represented by the structural formula (6), a hydrogen atom, and a monovalent organic residue, and at least one of R_5-R_8 is a group represented by the structural formula (6).

43. The method of manufacturing a recorded matter according to claim 41, wherein the hindered amine compound is a chemical compound having at least two substituents represented by the structural formula (6).

44. The method of manufacturing a recorded matter according to claim 41, wherein the hindered amine compound is a compound represented by the following formula (8):



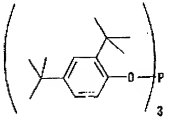
(8)

45. The method of manufacturing a recorded matter according to claim 41, wherein the hindered amine compound is a liquid.

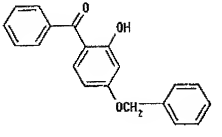
46. The method of manufacturing a recorded matter according to any one of claims 30, 35 and

41, wherein the non-volatile liquid further contains a substance capable of being dissolved or uniformly dispersed in the non-volatile liquid.

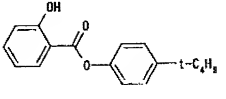
47. The method of manufacturing a recorded matter according to claim 46, wherein the substance capable of being dissolved or uniformly dispersed in the non-volatile liquid is at least one of the compounds represented by the following formulas (9) to (16):



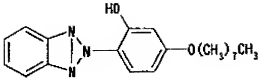
(9)



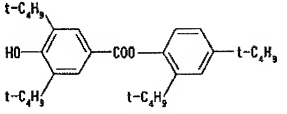
(10)



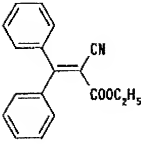
(11)



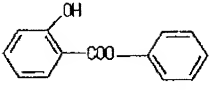
(12)



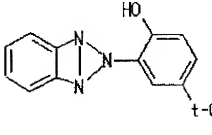
(13)



(14)



(15)



(16)

wherein t-C_4H_9 is a tert-butyl group and t-C_8H_{17} is

a tert-octyl group.

48. The method of manufacturing a recorded matter according to claim 46, wherein the substance capable of being dissolved or uniformly dispersed in the non-volatile liquid is a thickening agent.

49. The method of manufacturing a recorded matter according to claim 27, wherein the ink-receiving layer is provided on a substrate for supporting the ink-receiving layer, and a porous layer is provided between the ink-receiving layer and the substrate.

50. The method of manufacturing a recorded matter according to claim 49, wherein the porous layer contains barium sulfate.

51. The method of manufacturing a recorded matter according to claim 28, wherein the fine particles are made of alumina.

52. The method of manufacturing a recorded matter according to claim 28, wherein the fine particles are made of silicon oxide.

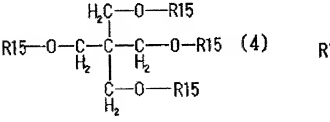
53. The method of manufacturing a recorded matter according to claim 27, wherein a dynamic viscosity of the liquid when the liquid is applied to the ink-receiving layer is 50-600 centistokes.

54. A method of improving image fastness of a recorded matter having an ink-receiving layer of a porous structure, the ink-receiving layer having an image region where an image is formed with a coloring material, the method comprising the step of forming in the image region a portion in which all or substantially all of the coloring material distributing in a thickness direction of the ink-receiving layer is embedded in a non-volatile liquid not dissolving the coloring material.

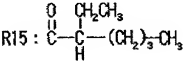
55. A method of improving image fastness of a recorded matter having an ink-receiving layer of a porous structure, the ink-receiving layer having an image region where an image is formed with a coloring material, the method comprising the step of forming in the image region a portion in which all or substantially all of the coloring material distributing in a thickness direction of the ink-receiving layer is embedded in a non-volatile liquid not dissolving the coloring material, wherein the liquid contains at least one of a

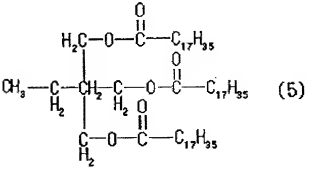
silicone oil and a hindered ester.

56. The method of improving image fastness according to claim 55, wherein the hindered ester is selected from the groups consisting of esters represented by the following structural formulas (4) and (5):



(4)





(5)

57. The method of improving image fastness according to claim 56, wherein the non-volatile liquid contains hindered esters represented by the structural formulas (4) and (5); and a content of the hindered ester represented by the chemical formula (4) is 50% or more of a total weight of the liquid.

58. The method of improving image fastness

according to claim 54, wherein the porous structure of the ink-receiving layer is formed with fine particles and the coloring material is adsorbed onto surfaces of the fine particles.

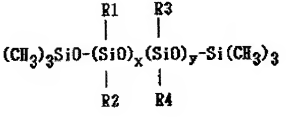
59. An image-fastness improving agent for improving image fastness of a recorded matter having an ink-receiving layer of a porous structure, the ink-receiving layer having an image region where an image is formed with a coloring material, the agent mainly comprising a non-volatile liquid not dissolving the coloring material.

60. The image fastness-improving agent according to claim 59, wherein the porous structure of the ink-receiving layer is formed with fine particles and the coloring material is adsorbed onto surfaces of the fine particles.

61. The image fastness-improving agent according to claim 59, wherein the liquid contains silicon oil.

62. The image fastness-improving agent according to claim 61, wherein the silicone oil is modified silicone oil.

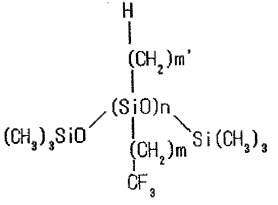
63. The image fastness-improving agent according to claim 62, wherein the modified silicone oil has a structure represented by the following structural formula (1):



(1)

wherein R1, R2, R3 and R4 are independently selected from the group consisting of a phenyl group, a substituted or unsubstituted alkyl group, a halogenated alkyl group, and a functional substituent having a UV absorbency or an antioxidant function; and x and y are independently zero or a positive integer; both x and y do not simultaneously take zero.

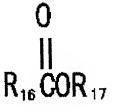
64. The image fastness-improving agent according to claim 62, wherein the modified silicone oil has a structure represented by the following structural formula (2):



(2)

wherein n is an integer from 50 to 600; and m and m' are independently an integer of 1 to 20.

65. The image fastness-improving agent according to claim 61, wherein the liquid further contains a compound represented by the following structural formula (3):



(3)

wherein R_{16} denotes an alkyl residue of an isocarboxylic acid having 5 to 18 carbon atoms, and R_{17} denotes an alkyl residue of an isoalcohol having 3 to 18 carbon atoms.

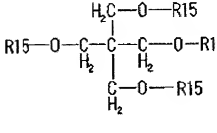
66. The image fastness-improving agent according to claim 59, wherein the liquid contains an ester of a saturated fatty acid and an alcohol.

67. The image fastness-improving agent according to claim 66, wherein the saturated fatty acid is a polyvalent saturated fatty acid.

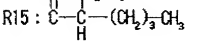
68. The image fastness-improving agent according to claim 66, wherein the alcohol is a polyhydric alcohol.

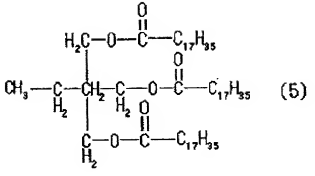
69. The image fastness-improving agent according to claim 66, wherein the saturated fatty acid is a saturated fatty acid having 5 to 18 carbon atoms and the alcohol is an alcohol having 2 to 30 carbon atoms.

70. The image fastness-improving agent according to claim 66, wherein the ester is selected from the group consisting of hindered esters represented by the following structural formulas (4) and (5):



(4)

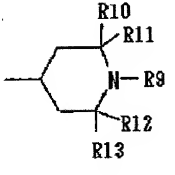




(5)

71. The image fastness-improving agent according to claim 70, wherein the liquid contains hindered esters represented by the aforementioned structural formulas (4) and (5); and a content of the hindered ester represented by the chemical formula (4) is 50% or more of a total weight of the liquid.

72. The image fastness-improving agent according to claim 59, wherein the liquid contains a hindered amine compound having at least one substituent represented by the following structural formula (6):

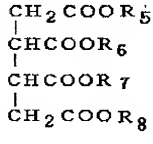


(6)

wherein R9 is H or an alkyl group; and R10-R13 is

independently a hydrogen atom or an alkyl group having 1 to 3 carbon atoms.

73. The image fastness-improving agent according to claim 72, wherein the hindered amine is a hindered amine compound represented by the following structural formula (7):



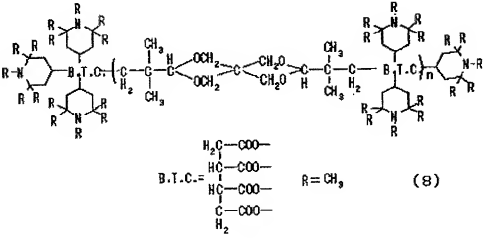
(7)

wherein R_5-R_8 are independently selected from the group consisting of a group represented by the aforementioned structural formula (6), a hydrogen atom, and a monovalent organic residue, and at least one of R_5-R_8 is a group represented by the structural formula (6).

74. The image fastness-improving agent according to claim 72, wherein the hindered amine compound is a chemical compound having at least two substituents represented by the structural formula (6).

75. The image fastness-improving agent according to claim 72, wherein the hindered amine

compound is a compound represented by the following formula (8):

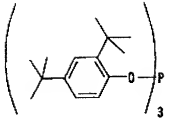


76. The image fastness-improving agent according to claim 72, wherein the hindered amine compound is a liquid.

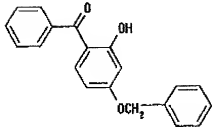
77. The image fastness-improving agent according to any one of claims 61, 66 and 72, wherein the non-volatile liquid further contains a substance capable of being dissolved or uniformly dispersed in the non-volatile liquid.

78. The image fastness-improving agent according to claim 77, wherein the substance capable of being dissolved or uniformly dispersed in the non-volatile liquid is at least one of the compounds represented by the following formulas

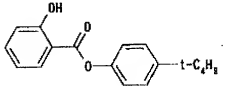
(9) to (16):



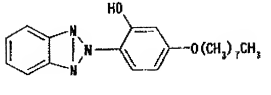
(9)



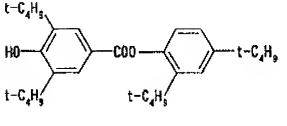
(10)



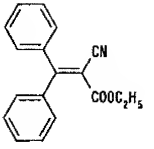
(11)



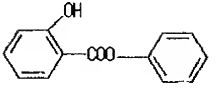
(12)



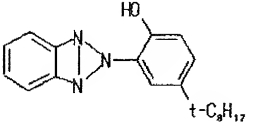
(13)



(14)



(15)



(16)

79. The image fastness-improving agent according to claim 77, wherein the substance capable of being dissolved or uniformly dispersed in the non-volatile liquid is a thickening agent.

80. The image fastness-improving agent according to claim 59, wherein the agent substantially contains no organic solvent.

81. The image fastness-improving agent

according to claim 59, wherein a dynamic viscosity is 50-600 centistokes.

82. A kit for improving image fastness of a recorded matter having an ink-receiving layer of a porous structure, the ink-receiving layer having a region where an image is formed with a coloring material, the kit comprising a container containing an image fastness-improving agent according to claim 59 and a member for performing at least one of wiping and polishing a surface of the ink-receiving layer after the liquid is supplied to the surface.

83. The fastness improving kit according to claim 82, wherein the member for performing at least one of wiping and polishing is a material formed of a natural or artificial fiber which does not damage the surface of the ink-receiving layer.

84. A dispenser containing an image fastness-improving agent according to claim 59.

85. An applicator for an image fastness-improving agent comprising a storage portion for storing the image fastness-improving agent according to claim 59 and an application member of

the image fastness-improving agent, wherein the storage portion and the application member are integrated such that the image fastness-improving agent in the storage portion can ooze from a surface of the application member.

86. A method of improving fastness of an image formed on a recording medium having an ink-receiving layer of a porous structure by applying a coloring material to the ink-receiving layer by an ink-jet method, comprising the steps of:

(i) forming an image by applying the coloring material to the ink-receiving layer by the ink jet method;

(ii) applying an image fastness-improving agent mainly containing a nonvolatile substance being a liquid state at normal temperature and normal pressure and not dissolving the coloring material, to the ink-receiving layer having the image formed therein; and

(iii) forming in the region having the image formed therein, a portion in which all or substantially all of the coloring material distributing in a thickness of the ink-receiving layer is embedded in the image fastness-improving agent.

87. The method of improving an image fastness according to claim 86, wherein the porous structure of the ink-receiving layer is formed with fine particles and the coloring material is adsorbed onto surfaces of the fine particles.

88. The method of improving an image fastness according to claim 86, wherein the step (iii) comprises a sub-step of forming, in the region having the image formed therein, a portion in which all or substantially all pores present in a thickness direction of the ink-receiving layer are filled with the liquid.

89. The method of improving an image fastness according to claim 86, wherein the step (iii) further comprises at least one of the steps of wiping and polishing the surface of the ink-receiving layer.

90. The method of improving an image fastness according to claim 86, wherein the image fastness-improving agent contains at least one selected from a silicone oil and a saturated fatty acid ester which are nonvolatile at normal temperature and normal pressure.

91. The method of improving an image fastness according to claim 86, wherein the image fastness-improving agent contains at least one type selected from silicone oils and fatty acid esters which are nonvolatile at normal temperature and normal pressure, and at least one type of additives selected from the group consisting of an antioxidant, a light stabilizer, a radical quenching agent, a UV absorber, a fragrance, a polishing agent, a disinfectant, and an insecticide.

92. The method of improving an image fastness according to claim 87, wherein the fine particles are alumina fine particles.

93. The method of improving an image fastness according to claim 87, wherein the fine particles are silica fine particles.

94. A kit of improving image fastness comprising a recording medium having an ink-receiving layer of a porous structure and an image fastness-improving agent according to claim 59.